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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,719	12/10/2004	Thu-Hoa Tran-Thi	10404.005.00-US	6072

7590 09/22/2008  
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EXAMINER
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BURKHART, ELIZABETH A

ART UNIT	PAPER NUMBER
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1792

MAIL DATE	DELIVERY MODE
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09/22/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/517,719	<b>Applicant(s)</b> TRAN-THI ET AL.	
	<b>Examiner</b> ELIZABETH A. BURKHART	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 13-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-12 and 27-31 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

1. Claims 1-31 are pending in the applications. Amended claims 1-12 and 27-31 have been noted. Claims 32 and 33 have been cancelled. Claims 13-26 have been withdrawn from further consideration. The amendment filed 6/13/2008 has been entered and carefully considered.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
2. Claims 1-4, 8, 10-12, and 27-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al in view of Chao et al ('828) and Schultz-Ekloff et al.

Lee discloses a CVI process for the incorporation of a compound in the pores of a mesoporous material (MCM-41, SBA-15) comprising the sublimation of the compound in an area containing the said material. The compound is sublimed at 55°C, which is well below its thermal decomposition temperature. The compound is sublimed under

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vacuum. The incorporation of the compound within the pores may be monitored by a color change (p. 517, Col. 2). Since the porous material and compound are placed under vacuum, it is inherent that these are placed in a chamber. MCM-41 may be produced by a sol-gel process as evidenced by the instant specification (p. 3, lines 22-29 and p. 24, lines 11-13).

Lee does not disclose incorporating a probe molecule in the pores of a porous material, that the porous material is in the form of a block or thin layers, or that a monomer is formed within the pores.

Chao discloses functional materials may be deposited by CVI within the pores of molecular sieves, such as MCM-41 and SBA-15 in order to form sensors (Col. 1, lines 30-60, Col. 2, lines 5-7). The mesoporous material may be in the form of thin films (Col. 4, lines 15-20).

Schultz-Ekloff discloses a method of making optical sensors by depositing chromophores within the pores of molecular sieves, such as MCM-41, wherein the chromophores may be deposited by a gas phase deposition process (p. 100, Col. 1 and Fig. 8). Optical sensors have advantages over other sensor types such as having a fast response, not consuming oxygen, and they are not easily poisoned (p. 96, Col. 2).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to use the process of Lee to form a sensor as suggested by Chao, wherein the precursor compound is a chromophore (a probe molecule) as suggested by Schultz-Ekloff in order to form an optical sensor, since optical sensors have a fast response, do not consume oxygen, and is not easily poisoned.

Thus, claims 1-4, 8, 10-12, and 27-33 would have been obvious within the meaning of 35 USC 103 over the combined teachings of Lee, Chao, and Schultz-Ekloff.

3. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al in view of Chao et al ('828) and Schultz-Ekloff et al as applied above and further in view of Desu et al ('199).

Lee, Chao, and Schultz-Ekloff do not disclose subliming the compound by heating the chamber by immersion in an oil bath maintained at a chosen temperature.

Desu discloses a method of forming metal oxides within the pores of a porous substrate, wherein the precursor compound is heated using an oil bath to form a vapor of the precursor compound (Abstract, Col. 4, lines 35-40).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to heat the compound of Lee using an oil bath as suggested by Desu in order to uniformly heat the precursor compound.

Thus, claim 6 would have been obvious within the meaning of 35 USC 103 over the combined teachings of Lee, Chao, Schultz-Ekloff, and Desu.

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al in view of Chao et al ('828) and Schultz-Ekloff et al as applied above and further in view of Binner et al ('477).

Lee, Chao, and Schultz-Ekloff do not disclose thermally insulating the porous material from the wall and base of the chamber.

Binner discloses a CVI process of depositing a material within the pores of a porous substrate, wherein a substrate support is used to hold the substrate in the

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chamber and heat the substrate (Abstract, Col. 3, lines 1-10). This support would act to thermally insulate the substrate from the walls and base of the chamber.

It would have been obvious to one of ordinary skill in the art to use the known method of holding a substrate in a CVI chamber as suggested by Binner in the process of Lee in order to maintain the substrate at a specific temperature.

Thus, claim 7 would have been obvious within the meaning of 35 USC 103 over the combined teachings of Lee, Chao, Schultz-Ekloff, and Binner.

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al in view of Chao et al ('828) and Schultz-Ekloff et al as applied above and further in view of Hoffman et al.

Lee, Chao, and Schultz-Ekloff do not disclose monitoring the incorporation of the compound within the pores by optical measurements.

Hoffman discloses that optical measurements may be used to detect chromophores within the pores of a molecular sieve host (p. 281-282).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to use optical measurements as suggested by Hoffman in the processes of Lee, Chao, and Schultz-Ekloff in order to monitor the incorporation of the chromophores within the pores of the porous material.

Thus, claim 9 would have been obvious within the meaning of 35 USC 103 over the combined teachings of Lee, Chao, Schultz-Ekloff, and Hoffman.

***Allowable Subject Matter***

6. Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art does not disclose cooling the process chamber comprising the compound and porous material to a temperature of less than or equal to -40°C immediately before it is placed under vacuum.

***Response to Arguments***

7. Applicant's arguments filed 6/13/2008 have been fully considered but they are not persuasive. Applicant argues that Chao and Schultz-Ekloff are both silent regarding "the incorporation of a probe molecule." The examiner disagrees. Schultz-Ekloff teaches incorporation of a chromophore within the pores of molecular sieves, such as MCM-41 (p. 100, Col. 1 and Fig. 8). Instant Claim 31 and the instant specification at p. 24, line 15-p. 25, line 21 disclose that the probe molecule may be a chromophore.

***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELIZABETH A. BURKHART whose telephone number is (571)272-6647. The examiner can normally be reached on M-Th 7-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a



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USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Elizabeth A Burkhart/  
Examiner, Art Unit 1792

/Timothy H Meeks/  
Supervisory Patent Examiner, Art Unit 1792